

REMARKS

Claims 34-38 are herein amended.

Claims 42 and 43 are herein added.

Claims 13-32 are withdrawn.

Restriction Requirement

Applicant hereby confirms the election of invention A (Claims 1-12 and Claims 33-41) made by Mark Brightwell in a telephone conversation with the Examiner on March 17, 2004.

Claims Objections

Claims 34-38 were objected to because of typographical errors making it unclear upon which previous claim they depend. Thus, Claims 34-38 have been amended to make it clear that these claims depend on independent claim 33.

Allowable Subject Matter

Claims 2-10 were indicated to be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

Art Rejections

Claims 1, 11, 33-39 and 41 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over Woods (USPN 5,956,039) in view of Matsui (USPN 6,437,778).

Claim 12 was rejected under 35 U.S.C. Section 103(a) as being unpatentable over Woods (USPN 5,956,039) in view of Matsui (USPN 6,437,778) and further in view of Reed (USPN 5,577,180).

Claim 40 was rejected under 35 U.S.C. Section 103(a) as being unpatentable over Woods (USPN 5,956,039) in view of Matsui (USPN 6,437,778) and further in view of Hoff III (ACM Crossroads Student Magazine, “Faster 3D Game Graphics by Not Drawing What is Not Seen”).

These rejections are respectfully traversed based on the following reasoning.

Claim 1 recites:

A method for managing a scene graph, the method comprising:
determining a current location for a viewpoint;
determining a current locality threshold based on at least the current location
of the viewpoint;
determining which portions of the scene graph are relevant to the current
locality threshold;
loading into a local memory those portions of the scene graph that are relevant
within the current locality threshold; and
replacing portions of the scene graph that are not relevant within the current
locality threshold with one or more pointers, wherein the pointers indicate
where the replaced portions may be loaded from if the replaced portions are
needed.

This union of features is not taught or suggested in the cited references, whether considered singly or in combination.

In particular, none of the cited references suggest replacing portions of a scene graph with pointers as recited in claim 1. The office action points to a number of passages in Matsui as providing evidence for the anticipation of this feature. In particular, the office action points to:

Col. 12, lines 6-10,
Figure 8 and corresponding text,
Col. 21, lines 39-51,
“other locations through the reference, especially in regard to wait memory 59”,
Col. 22, lines 27-36.

At Col. 12, lines 4-10, Matsui teaches:

“In FIG. 8, in the virtual space area table, the objects existing (shard) in areas (virtual spaces) S1, S2, . . . are described in a list form. The data relating to each object is composed of the pointer value indicating the position of next object, object ID identifying the object, address identifying the client computer manipulating the object, and property data showing the position of object and others.”

Thus, it appears that Matsui suggests a number of virtual spaces and that each virtual space may be associated with a list of objects. The virtual space area table contains a pointer to an object list for each virtual space area as illustrated in Figure 8. (Please also

refer to Figure 1 for an illustration of two spaces and their associated objects. The viewpoint is shown as being currently located in the first space SP1.) Furthermore, it appears that each object of the object list has a pointer to a next object in the list. None of these pointers are used to replace portions of a scene graph as recited in claim 1.

At Col. 21, lines 39-51, Matsui teaches:

"Reference numeral 52 is a reader functioning as reading means, functioning as three-dimensional drawing means, for reading out data in one space unit from the 3 D database 51, and transferring to a 3 D drawing unit 53. The reader 52, aside from reading out the data about the space in which the viewpoint VP is currently located from the 3 D database 51 and giving it to the 3 D drawing unit 53 in the same way as in the prior art, further reads out the data in other space different from the space in which the viewpoint VP is currently located, from the 3 D database 51 and gives it to a wait memory 59 described below, according to the instruction given from an entrance judgment unit 58 described later. These two processes can be executed parallel."

This passage mentions transfers of data from a 3D database to a 3D drawing unit or to a wait memory. The data being transferred may be (a) data about the space in which the viewpoint VP is currently located, or, (b) data in other space different from the space in which the viewpoint VP is currently located. This passage contains no teaching concerning pointers or the operation of replacing portions of a scene graph with pointers as recited in claim 1.

At Col. 22, lines 27-36, Matsui teaches:

"Meanwhile, the data given to the wait memory 59 is held temporarily, and is given to the 3 D drawing unit 53 when the viewpoint actually moves to the space (next candidate space). Later, however, when the distance between the entrance and the viewpoint VP becomes more than the predetermined value, in other words, when the next candidate space disappears, the process of predictive reading is interrupted. Or when the next candidate space is switched to other space, predictive reading is executed on the new next candidate space."

There is no teaching or suggestion in this passage (or anywhere else in Matsui) of replacing portions of a scene graph with pointers as recited in claim 1.

Woods discloses a system and method for increasing performance via incremental fetching, loading and unloading of data assets of three-dimensional worlds based on transient asset priorities. At Col. 6, lines 16-36, Woods teaches:

“The present invention provides optimization techniques for fetching and caching assets. Such assets may be defined for example, in an Inline node. Inline nodes typically contain references to other scene graphs that are referred to as the children of the Inline node. An Inline node can read its children from anywhere in the world wide web. Further, the children of a Inline node often contain additional children.” [Underlining added]

“A node called a level of detail (LOD) node also uses the child-parent hierarchy. This group node is used to allow applications to switch between various representations of objects automatically. The children of LOD nodes typically represent the same object or objects at varying levels of detail, from highest detail to lowest. Thus, when the camera is far away from an object, there is no need to render the object with the highest level of detail. However as the observer moves closer to the object, the next level of detail is rendered to represent the object. The VRML author specifies, in a ranges array, the distances from the object which corresponds to each particular level of detail.”

“The Anchor group node loads a new scene into a VRML browser when one of its children is selected by the user.”

The Inline nodes contain references to other scene graphs which can be read from anywhere in the world wide web. However, these references are not pointers to portions of a scene graph which have been replaced. Thus, these references cannot be properly identified with the pointers as recited in claim 1.

Therefore, claim 1 and its dependents are patentably distinguished over the cited references.

Claims 33 and 39 recite features similar to those recited in claim 1, and thus, are patentably distinguished over the cited references based on similar reasoning.

CONCLUSION

Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert & Goetzel PC Deposit Account No. 50-1505/5181-68801/JCH.

Also enclosed herewith are the following items:

- Return Receipt Postcard
- Notice of Change of Address
- Check in the amount of \$ _____ for fees (_____).
- Other: _____

Respectfully submitted,



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